

The invention claimed is:

1. A heater having a high temperature shut off comprising:
 - a body for holding material to be heated;
 - a first heating element coupled to the body for heating material within the body;
 - a temperature sensitive element coupled to the body for sensing temperature;
 - a switch coupled to the temperature sensitive element for de-energizing the first heating element when the temperature sensitive element senses a temperature limit; and
 - a second heating element for heating the temperature sensitive element upon activation of the switch such that the first heating element is actively forced to remain de-energized.
2. The heater as defined in claim 1, wherein the switch comprises a thermal switch having an open position and a closed position.
3. The heater as defined in claim 2, wherein the thermal switch comprises a temperature sensitive snap disc.
4. The heater as defined in claim 1, wherein the second heating element has a positive temperature coefficient such that the resistance of the second heating element varies with temperature.
5. The heater as defined in claim 1, wherein the heater is a water heater.

6. The heater as defined in claim 5, wherein the water heater is employed in one of a hot tub and spa.
7. The heater as defined in claim 1, wherein the body comprises an elongated hollow for providing flow-through heating.
8. The heater as defined in claim 1, wherein the second heating element is thermally coupled to the temperature sensitive element.
9. The heater as defined in claim 1, wherein the temperature sensitive element and switch comprise a linear limit thermostat comprising a capillary tube and a snap action member.
10. A flow through water heater comprising:
 - an elongated hollow body for holding water to be heated;
 - a first heating element coupled to the body for heating water within the body;
 - a temperature sensitive element coupled to the body for sensing temperature of the water;
 - a shutoff switch coupled to the temperature sensitive element for de-energizing the first heating element when the temperature sensitive element senses a temperature limit; and
 - a second heating element for heating the temperature sensitive element upon activation of the switch such that the heater is forced to remain de-energized.

11. The heater as defined in claim 10, wherein the shutoff switch comprises a thermal switch having an open position and a closed position.
12. The heater as defined in claim 11, wherein the thermal switch comprises a temperature sensitive snap disc.
13. The heater as defined in claim 10, wherein the second heating element has a positive temperature coefficient such that the resistance of the second heating element varies with temperature.
14. The heater as defined in claim 10, wherein the water heater is employed in one of a hot tub and spa.
15. The heater as defined in claim 10, wherein the second heating element is thermally coupled to the temperature sensitive element.
16. The heater as defined in claim 10, wherein the temperature sensitive element and shutoff switch comprise a linear limit thermostat comprising a capillary tube and a snap action member.
17. A method of controlling a heater to provide a high temperature shut off, said method comprising the steps of:
 - providing a body of material to be heated;

heating the material with a first heating element;
sensing temperature of the material with a temperature sensitive element;
de-energizing the first heating element when the temperature exceeds a temperature limit;
and

heating the temperature sensitive element with a second heating element upon de-energizing the first heating element such that the first heating element is forced to remain de-energized.

18. The method as defined in claim 17, wherein the step of de-energizing the first heating element comprises actuating a switch upon the sensed temperature exceeding the temperature limit.

19. The method as defined in claim 18 further comprising the step of actuating the switch to a second position upon the sensed temperature dropping to a lower temperature limit.

20. The method as defined in claim 19, wherein said first heating element is energized when the switch returns to its first position.

21. The method as defined in claim 17 further comprising the steps of removing power to the first and second heating elements, and energizing the first heating element upon the temperature dropping below a lower temperature limit.

22. The method as defined in claim 17, wherein said step of heating with a second heating element comprises heating with a positive temperature coefficient heating element such that the resistance of the second heating element varies with temperature.

23. The method as defined in claim 17, wherein the body of material comprises water.

24. The method as defined in claim 23, wherein the heater is employed to heat water in one of a hot tub and spa.